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## POWERED COPING SAW

I CLAIM:

1. (currently amended) A saw including:

- 2 a blade assembly having a proximal end; said blade assembly including:
  - an elongate, thin blade having a longitudinal axis including
  - 4 a proximal end; and
  - a distal end; and
  - 6 a rigid frame including:
    - a proximal end connected to said proximal end of said blade; and
    - 8 a distal end connected to said distal end of said blade; said frame
- for supporting said blade in tension;
- 10 a housing including:
  - handle means for holding said saw in a hand,
  - 12 a rotary motor mounted to said housing including:
    - a drive shaft rotating about a shaft axis including:
    - 14 a front end;
- power means for powering said motor;
- 16 a piston slideably and non-rotatably supported in said housing including:
  - a front end connected to said proximal end of said blade assembly for
  - 18 moving said blade assembly along the longitudinal axis of said blade coincident with piston
- movement; and
- 20 a rear end; and
- motion converter means for connecting said front end of said drive shaft to said
- 22 rear end of said piston for converting rotary motion of said drive shaft into reciprocating
- linear motion of said piston; said motion converter means including:
- 24 an exterior surface on said drive shaft front end including:
  - a circumferential raceway in a plane at an at an angle to the shaft
  - 26 axis;

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28 a cap on said rear end of said piston having an inside surface; said cap  
fitting over said exterior surface of said front end of said drive shaft; and  
coupling means moving in said raceway for coupling with said cap to  
30 move said cap.

2. (canceled).

3. (currently amended) The saw of Claim 1 wherein:

2 said circumferential raceway is semicircular in cross-section; and  
said coupling means includes:  
4 a hemispherical orifice in said inside surface of said cap; and  
a ball bearing coupling said raceway and said hemispherical orifice.

4. (currently amended) A saw including:

2 a blade assembly having a proximal end; said blade assembly including:  
an elongate, thin blade having a longitudinal axis including:  
4 a proximal end; and  
a distal end; and  
6 a rigid frame including:  
a proximal end connected to said proximal end of said blade; and  
8 a distal end connected to said distal end of said blade; said frame  
for supporting said blade in tension;  
10 a generally cylindrical, elongate handle having a longitudinal axis and an outside  
surface adapted for holding said saw in a user's hand,  
12 a rotary motor mounted within said handle including:  
a drive shaft rotating about a shaft axis; the shaft axis parallel to the handle  
14 axis; said drive shaft including:  
a front end;  
16 power means for powering said motor;  
a piston including:  
18 a front end connected to said proximal end of said blade assembly for

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moving said blade assembly along the longitudinal axis of said blade coincident with piston  
20 movement; and

a rear end slideably and non-rotatably supported in said handle so as  
22 to be movable parallel to the handle axis; and

motion converter means mounted in said handle for connecting said front end of  
24 drive shaft to said rear end of said piston for converting rotary motion of said drive shaft  
into reciprocating linear motion of said piston.

5. (currently amended) A saw including:

2 a blade assembly having a proximal end; said blade assembly including:

an elongate, thin blade having a longitudinal axis including

4 a proximal end; and

a distal end; and

6 a rigid frame including:

a proximal end connected to said proximal end of said blade; and

8 a distal end connected to said distal end of said blade; said frame  
for supporting said blade in tension;

10 a generally cylindrical, elongate housing having a longitudinal axis and an outside  
surface adapted for holding said saw in a hand,

12 a rotary motor mounted within said housing including:

a drive shaft rotating about a shaft axis; the shaft axis parallel to the housing  
14 axis; said drive shaft including:

a front end;

16 power means for powering said motor;

a piston slideably and non-rotatably supported in said housing so as to be movable  
18 parallel to the housing axis; including:

a front end connected to said proximal end of said blade assembly for

20 moving said blade assembly along the longitudinal axis of said blade coincident with piston  
movement; and

22 a rear end; and

motion converter means for connecting said front end of said drive shaft to said

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24 rear end of said piston for converting rotary motion of said drive shaft into reciprocating  
linear motion of said piston; said motion converter means including:  
26 an exterior surface on said drive shaft front end including:  
a circumferential raceway in a plane at an at an angle to the shaft  
28 axis;  
a cap on said rear end of said piston having an inside surface; said cap  
30 fitting over said exterior surface of said front end of said drive shaft; and  
coupling means moving in said raceway for coupling with said cap to  
32 move said cap.

6. (original) The saw of Claim 5 wherein:

2 said circumferential raceway is semicircular in cross-section; and  
said coupling means includes:  
4 a hemispherical orifice in said interior surface of said cap; and  
a ball bearing coupling said raceway and said hemispherical orifice.

7. (once amended) The saw of Claim 5 wherein:

2 said motor is an electric motor.

8. (original] The saw of Claim 7 wherein:

2 said power means is an electrical cord.

9. (currently amended) In combination:

2 a full dental arch model including:  
a positive die of a full dental arch including:  
4 gums; and  
a plurality of teeth; and  
6 an arch plate connected to said die; said full arch model being U-shaped in  
top view with opposing left and right sections;  
8 a coping saw for cutting individual dies from said dental model including:  
a blade assembly having a proximal end; said blade assembly including:

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10                    an elongate, blade having a longitudinal axis and having a thickness  
adapted for cutting individual dies from said model including  
12                    a proximal end; and  
                      a distal end; and  
14                    a rigid frame including:  
                      a proximal end connected to said proximal end of said blade; and  
16                    a distal end connected to said distal end of said blade; said frame  
for supporting said blade in tension;  
18                    a housing including:  
                      handle means for holding said saw in a hand,  
20                    a rotary motor mounted to said housing including:  
                      a drive shaft rotating about a shaft axis including:  
22                    a front end;  
                      power means for powering said motor;  
24                    a piston slideably and non-rotatably supported in said housing including:  
                      a front end connected to said blade assembly for moving said blade assembly  
26 along the longitudinal axis of said blade coincident with piston movement; and  
                      a rear end; and  
28                    motion converter means for connecting said front end of said drive shaft to said  
rear end of said piston for converting rotary motion of said drive shaft into reciprocating  
30 linear motion of said piston resulting in a stroke length of said blade assembly of less  
than the distance between opposing U-sections along a cut line.

10. (original) The combination of Claim 9 wherein:

2                    said housing is generally cylindrical and elongate having a longitudinal axis and an  
outside surface adapted for holding said saw in a hand.

11. (original) The combination of Claim 10 wherein:

2                    the shaft axis of said drive shaft is parallel to the housing axis; and  
said piston moves parallel to the housing axis.

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12. (currently amended) The combination of Claim 9 wherein said motion converter  
2 means includes:  
an exterior surface on said drive shaft front end including:  
4 a circumferential raceway in a plane at an angle to the shaft axis;  
a cap on said rear end of said piston having an inside surface; said cap fitting over  
6 said exterior surface of said front end of said drive shaft; and  
coupling means moving in said raceway for coupling with said cap to move said  
8 cap.

13. (currently amended) The combination of Claim 12 wherein:  
2 said circumferential raceway is semicircular in cross-section; and  
said coupling means includes:  
4 a hemispherical orifice in said inside surface of said cap; and  
a ball bearing coupling said raceway and said hemispherical orifice.

14. (original) The combination of Claim 9 wherein:  
2 said motor is an electric motor.

15. (original) The combination of Claim 14 wherein:  
2 said power means is an electrical cord.

16. (new) In combination:  
2 a dental arch model including:  
a positive die of a dental arch including:  
4 gums; and  
a plurality of teeth; and  
6 an arch plate connected to said die;  
a coping saw for cutting individual dies from said dental model including:  
8 a blade assembly having a proximal end; said blade assembly including:  
an elongate, thin blade having a longitudinal axis including:  
10 a proximal end; and

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12 a distal end; and  
a rigid frame including:  
a proximal end connected to said proximal end of said  
14 blade; and  
a distal end connected to said distal end of said blade; said  
16 frame for supporting said blade in tension;  
a generally cylindrical, elongate handle having a longitudinal axis and an  
18 outside surface adapted for holding said saw in a user's hand,  
a rotary motor mounted within said handle including:  
20 a drive shaft rotating about a shaft axis; the shaft axis parallel to the  
handle axis; said drive shaft including:  
22 a front end;  
power means for powering said motor;  
24 a piston including:  
a front end connected to said proximal end of said blade  
26 assembly for moving said blade assembly along the longitudinal axis of said blade  
coincident with piston movement; and  
28 a rear end slideably and non-rotatably supported in said  
handle so as to be movable parallel to the handle axis; and  
30 motion converter means mounted in said handle for connecting said front end of  
drive shaft to said rear end of said piston for converting rotary motion of said drive shaft  
32 into reciprocating linear motion of said piston.

17. (new) A method for cutting individual dies from a dental arch model including the  
2 step of:

obtaining a dental arch model including: a positive die of a dental arch including:  
4 gums; and a plurality of teeth; and an arch plate connected to the die;

obtaining a coping saw including: a blade assembly having a proximal end; the  
6 blade assembly including: an elongate, thin blade having a longitudinal axis including: a  
proximal end; and a distal end; and a rigid frame including: a proximal end connected to  
8 the proximal end of the blade; and a distal end connected to the distal end of the blade;

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the frame for supporting the blade in tension; a generally cylindrical, elongate handle  
10 having a longitudinal axis and an outside surface adapted for holding the saw in a user's  
hand, a rotary motor mounted within the handle including: a drive shaft rotating about a  
12 shaft axis; the shaft axis parallel to the handle axis; the drive shaft including: a front end;  
power means for powering the motor; a piston including: a front end connected to the  
14 proximal end of the blade assembly for moving the blade assembly along the longitudinal  
axis of the blade coincident with piston movement; and a rear end slideably and non-  
16 rotatably supported in the handle so as to be movable parallel to the handle axis; and motion  
converter means mounted in the handle for connecting the front end of drive shaft to the  
18 rear end of the piston for converting rotary motion of the drive shaft into reciprocating  
linear motion of the piston; and  
20 cutting an individual die from the obtained dental arch model using the obtained  
saw.